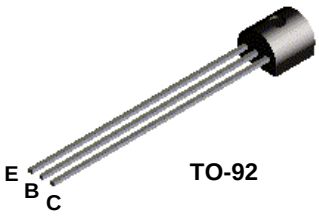
FAIRCHILD
SEMICONDUCTOR TM

# BC547
# BC547A
# BC547B
# BC547C




TO-92

## NPN General Purpose Amplifier

This device is designed for use as general purpose amplifiers and switches requiring collector currents to 300 mA. Sourced from Process 10. See PN100A for characteristics.

### Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $V_{CEO}$ | Collector-Emitter Voltage | 45 | V |
| $V_{CES}$ | Collector-Base Voltage | 50 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 6.0 | V |
| $I_C$ | Collector Current - Continuous | 500 | mA |
| $T_J$, $T_{stg}$ | Operating and Storage Junction Temperature Range | -55 to +150 | °C |

*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

**NOTES**:
**1)** These ratings are based on a maximum junction temperature of 150 degrees C.
**2)** These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

### Thermal Characteristics

TA = 25°C unless otherwise noted

| Symbol | Characteristic | Max | Units |
|---|---|---|---|
| | | BC547 / A / B / C | |
| $P_D$ | Total Device Dissipation<br>Derate above 25°C | 625<br>5.0 | mW<br>mW/°C |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 83.3 | °C/W |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 200 | °C/W |

## NPN General Purpose Amplifier
(continued)

### Electrical Characteristics
TA = 25°C unless otherwise noted

| Symbol | Parameter | Test Conditions | Min | Max | Units |
|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage | $I_C$ = 1.0 mA, $I_B$ = 0 | 45 | | V |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C$ = 10 μA, $I_E$ = 0 | 50 | | V |
| $V_{(BR)CES}$ | Collector-Base Breakdown Voltage | $I_C$ = 10 μA, $I_E$ = 0 | 50 | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E$ = 10 μA, $I_C$ = 0 | 6.0 | | V |
| $I_{CBO}$ | Collector Cutoff Current | $V_{CB}$ = 30 V, $I_E$ = 0<br>$V_{CB}$ = 30 V, $I_E$ = 0, $T_A$ = +150 °C | | 15<br>5.0 | nA<br>μA |
| **ON CHARACTERISTICS** | | | | | |
| $h_{FE}$ | DC Current Gain | $V_{CE}$ = 5.0 V, $I_C$ = 2.0 mA **547**<br>**547A**<br>**547B**<br>**547C** | 110<br>110<br>200<br>420 | 800<br>220<br>450<br>800 | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C$ = 10 mA, $I_B$ = 0.5 mA<br>$I_C$ = 100 mA, $I_B$ = 5.0 mA | | 0.25<br>0.60 | V<br>V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $V_{CE}$ = 5.0 V, $I_C$ = 2.0 mA<br>$V_{CE}$ = 5.0 V, $I_C$ = 10 mA | 0.58 | 0.70<br>0.77 | V<br>V |
| **SMALL SIGNAL CHARACTERISTICS** | | | | | |
| $h_{fe}$ | Small-Signal Current Gain | $I_C$ = 2.0 mA, $V_{CE}$ = 5.0 V,<br>f = 1.0 kHz | 125 | 900 | |
| NF | Noise Figure | $V_{CE}$ = 5.0 V, $I_C$ = 200 μA,<br>$R_S$ = 2.0 kΩ, f = 1.0 kHz,<br>$B_W$ = 200 Hz | | 10 | dB |

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|---|---|---|
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